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Docket No. F-8224

Ser. No. 10/823,919

AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1 -2. (Canceled)

3. (Currently Amended) A battery comprising:

an electrode group formed from battery electrode plates of a positive electrode and a negative electrode alternately laminated with a separator interposed therebetween;

a battery case for housing said electrode group; and

at least one of the battery electrode plates being manufactured by a method comprising:

impregnating an entire porous core substrate, which forms the at least one battery electrode plate and is thin plate shaped, with an active material containing a binder prior to press working the porous core substrate so as to produce a variation of impregnation density of said active material across said active material impregnated porous substrate which is less than 1.5 %;

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press working a first surface of said active material impregnated core substrate to form pressed portions while excluding press working an area extending a length of said active material impregnated core substrate so as to form a rail shaped protrusion of said area which is not pressed worked and which protrudes above said pressed portions and defines boundaries with said pressed portions extending the length of said active material impregnated core;

removing the active material from said rail shaped protrusion by applying ultrasonic vibrations to said rail shaped protrusion to form said rail shaped protrusion into a core substrate exposed section by applying ultrasonic vibrations to said rail shaped protrusion and leave a remainder of said active material impregnated core substrate as active material impregnated sections;

said removing the active material includes removing the active material from a volume of said active material impregnated core substrate defined by said rail shaped protrusion and extending from said first surface at said rail shaped protrusion to an opposing second surface of said active material impregnated core substrate so

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as to result in 4 % or less residual active material by weight in said volume of said core substrate exposed section;

compressing said core substrate exposed section down to an identical level with said ~~pressed portions~~ active material impregnated sections of said active material impregnated core substrate to produce substantially true straight boundaries between said core substrate exposed section and said ~~pressed portions~~ active material impregnated sections which extend the length of said active material impregnated core, wherein said substantially true straight boundaries exhibit a deviation from straight of no more than 0.2 mm;

cutting said core substrate exposed section lengthwise along a line positioned between said substantially true straight boundaries to divide said core substrate exposed section and produce first and second core substrate pieces and produce exposed section cut sides each of which is separated from a corresponding one of said substantially true straight boundaries by a portion of said core substrate exposed section, wherein said core substrate exposed section and said exposed section cut sides extend along an entire

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longitudinal side of each of said first and second core substrate pieces; and

welding a collector lead to at least one of said first and second core substrate pieces at a corresponding one of said exposed section cut sides of said core substrate exposed section.

4. (Canceled)

5. (Previously Presented) The battery according to claim 3, wherein said pressed portions are pressed by a single press working using a roller having at least a 550 mm diameter producing an elongation less than 1.9%.

6. (Previously Presented) The battery according to claim 5, wherein said pressed portions are pressed to approximately half a thickness of an original thickness of said core substrate.

7. (Previously Presented) The battery according to claim 6, wherein said pressed portions are pressed by applying 10 ton/cm.

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8. (Previously Presented) The battery according to claim 7, wherein said roller is advanced at approximate 450 mm/sec.

9. (Previously Presented) The battery according to claim 8, wherein said core substrate has a lower surface opposite an upper surface in which said rail shaped protrusion is formed, the rail shaped protrusion has a thickness B which is approximately 1.1 mm extending from said lower surface to a top surface of said rail shaped protrusion, and said pressed portions have a thickness D which is approximately 0.6 mm.

10. (Previously Presented) The battery according to claim 3, wherein said impregnating the entire porous core substrate before said work pressing forming said pressed portions is effected so as to produce an impregnation density variation of no more than 1.5% in said pressed portions after forming said battery electrode.

11. (Previously Presented) The battery according to claim 3, wherein:
said removing the active material includes removing the active material from a volume of said active material impregnated core substrate defined by said rail shaped protrusion and extending from said first surface at said rail shaped protrusion to an opposing second surface of said active material impregnated core

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substrate so as to result in 4% or less residual active material by weight in said volume of said core substrate exposed section; and

said compressing said core substrate exposed section compresses said core substrate exposed section to result in a strength of said core substrate exposed section, after said removing of said active material and said compressing, being substantially equal to a strength of said pressed portions.

12. (Previously Presented) The battery according to claim 3, wherein said battery case is prismatic.

13-20. (Canceled)

21. (New) An impregnated battery electrode plate manufactured by a method comprising:

impregnating an entire porous core substrate, which forms the at least one battery electrode plate and is thin plate shaped, with an active material containing a binder prior to press working the porous core substrate so as to produce a variation of impregnation density of said active material across said active material impregnated porous substrate which is less than 1.5%;

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press working a first surface of said active material impregnated core substrate to form pressed portions while excluding press working an area extending a length of said active material impregnated core substrate so as to form a rail shaped protrusion of said area which is not pressed worked and which protrudes above said pressed portions and defines boundaries with said pressed portions extending the length of said active material impregnated core;

removing the active material from said rail shaped protrusion by applying ultrasonic vibrations to said rail shaped protrusion to form said rail shaped protrusion into a core substrate exposed section and leave a remainder of said active material impregnated core substrate as active material impregnated sections having a variation of impregnation density of said active material across said remainder which is less than 1.5%;

said removing the active material includes removing the active material from a volume of said active material impregnated core substrate defined by said rail shaped protrusion and extending from said first surface at said rail shaped protrusion to an opposing second surface of said active material impregnated core substrate so as to result in 4% or less residual active material by weight in said volume of said core substrate exposed section;

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compressing said core substrate exposed section down to an identical level with said active material impregnated sections of said active material impregnated core substrate to produce substantially true straight boundaries between said core substrate exposed section and said active material impregnated sections which extend the length of said active material impregnated core, wherein said substantially true straight boundaries exhibit a deviation from straight of no more than 0.2 mm; and

cutting said core substrate exposed section lengthwise along a line positioned between said substantially true straight boundaries to divide said core substrate exposed section and produce first and second core substrate pieces and produce exposed section cut sides each of which is separated from a corresponding one of said substantially true straight boundaries by a portion of said core substrate exposed section, wherein said core substrate exposed section and said exposed section cut sides extend along an entire longitudinal side of each of said first and second core substrate pieces.

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22. (New) The impregnated battery electrode plate according to claim 21, wherein said pressed portions are pressed by a single press working using a roller having at least a 550 mm diameter producing an elongation less than 1.9%.

23. (New) The impregnated battery electrode plate according to claim 21, wherein said pressed portions are pressed to approximately half a thickness of an original thickness of said core substrate.

24. (New) The impregnated battery electrode plate according to claim 21, wherein said removing the active material in combination with said compressing said core substrate exposed section compresses said core substrate exposed section to result in a strength of said core substrate exposed section, after said removing of said active material and said compressing, being substantially equal to a strength of said active material impregnated sections.

25. (New) The impregnated battery electrode plate according to claim 21, further comprising a collector lead welded to at least one of said first and second core substrate pieces at a corresponding one of said exposed section cut sides of said core substrate exposed section.

26. (New) A prismatic battery comprising:

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positive and negative electrode plates wherein at least one of said positive and negative electrode plates is a plurality of the electrode plate according to claim 21;

an electrode plate group formed of alternately laminated ones of said positive and said negative electrode plates with separators therebetween; and

a prismatic battery case housing said electrode plate group and including positive and negative connections to said electrode plate group.